

January 4, 2013

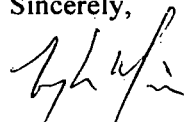
Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
901 North 5th Street
Kansas City, KS 66101

Re: The Doe Run Company - Leadwood Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 50 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0272) for the referenced project and on behalf of The Doe Run Company, the progress report for the period November 1, 2012 through November 30, 2012 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0800.

Sincerely,



Ty L. Morris, P.E., R.G.
Vice President

TLM/jms

Enclosures

c: Mark Nations – TDRC
Matt Wohl – TDRC (electronic only)
Kathy Rangen – MDNR
Tim Skoglund – Barr Engineering

07CR

40408424



Superfund

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Leadwood Mine Tailings Site
Leadwood, Missouri
Removal Action - Monthly Progress Report
Period: November 1, 2012 – November 30, 2012

1. Actions Performed or Completed This Period:

- a. No activities were completed at the site during this period.

2. Data and Results Received This Period:

- a. During this period, water samples were collected from downstream of Leadwood Dam and the East Seep and Erosion Area, as well as from upstream and downstream of the confluence of Eaton Creek with Big River. The analytical results for this event are included with this progress report.
- b. During this period, the Ambient Air Monitoring Report for August 2012 was received. Any issues identified in this report are discussed below. A copy of this document has been sent to your attention.

The August 2012 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No sample was taken with the Leadwood #3 (School) PM₁₀ monitor on 08/01/12 due to mechanical failure. Upon discovering the issue the monitor was fixed.
- No sample was taken with the Leadwood #3 (School) TSP monitor on 08/31/12 due to filter damage seemingly caused by an animal. The monitor was cleaned out and the filter replaced.

3. Scheduled Activities not Completed This Period:

- a. None.

4. Planned Activities for Next Period:

- a. Continue vegetation maintenance activities. The use of biosolids will only be continued if a biosolids management plan has been submitted to and approved by EPA.
- b. It is anticipated that EPA will use this site as a soil repository in the future. Preparations for these activities will continue.
- c. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- d. Complete air monitoring activities as described in the Removal Action Work Plan.

5. Changes in Personnel:

- a. None.

6. Issues or Problems Arising This Period:

- a. None.

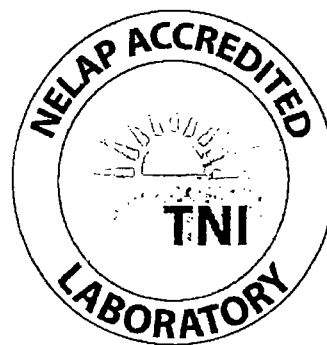
7. Resolution of Issues or Problems Arising This Period:

- a. None.

End of Monthly Progress Report

November 26, 2012

Allison Olds
Barr Engineering Company
1001 Diamond Ridge
Suite 1100
Jefferson City, MO 65109
TEL: (573) 638-5007
FAX: (573) 638-5001



RE: Leadwood MTS-25/86-0013

WorkOrder: 12110727

Dear Allison Olds:

TEKLAB, INC received 5 samples on 11/15/2012 2:25:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael L. Austin".

Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

This reporting package includes the following:

Cover Letter	1
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Chain of Custody	Appended

Client: Barr Engineering Company**Work Order:** 12110727**Client Project:** Leadwood MTS-25/86-0013**Report Date:** 26-Nov-12**Abbr Definition**

CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.

DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.

DNI Did not ignite

DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.

ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.

IDPH IL Dept. of Public Health

LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).

LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MB Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.

MDL Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).

MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MW Molecular weight

ND Not Detected at the Reporting Limit

NELAP NELAP Accredited

PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).

RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.

RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).

SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.

Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

TNTC Too numerous to count (> 200 CFU)

Qualifiers

- Unknown hydrocarbon

E - Value above quantitation range

M - Manual Integration used to determine area response

R - RPD outside accepted recovery limits

X - Value exceeds Maximum Contaminant Level

B - Analyte detected in associated Method Blank

H - Holding times exceeded

ND - Not Detected at the Reporting Limit

S - Spike Recovery outside recovery limits

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Cooler Receipt Temp: 2.0 °C

Locations and Accreditations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425

Phone (618) 344-1004

Fax (618) 344-1005

Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415

Phone (217) 698-1004

Fax (217) 698-1005

Email KKlostermann@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214

Phone (913) 541-1998

Fax (913) 541-1998

Email dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2013	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2013	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2013	Collinsville
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2013	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2013	Collinsville

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Lab ID: 12110727-001

Client Sample ID: LW-001

Matrix: AQUEOUS

Collection Date: 11/14/2012 8:30

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		294	mg/L	20	11/21/2012 2:01	R170781
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		7.99		1	11/16/2012 8:46	R170567
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		460	mg/L	1	11/16/2012 14:07	R170603
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	11/15/2012 18:11	R170561
STANDARD METHODS 2540 F								
Solids, Settleable	NELAP	0.1		< 0.1	ml/L	1	11/15/2012 17:00	R170564
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		5.0	mg/L	1	11/16/2012 15:32	R170625
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 12:22	83483
Zinc	NELAP	10.0		532	µg/L	1	11/20/2012 12:22	83483
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 1:09	83461
Zinc	NELAP	10.0		548	µg/L	1	11/20/2012 1:09	83461
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	4.00	X	11.4	µg/L	2	11/16/2012 11:45	83432
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	4.00	X	5.58	µg/L	2	11/16/2012 15:08	83435

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Lab ID: 12110727-002

Client Sample ID: LW-002

Matrix: AQUEOUS

Collection Date: 11/14/2012 6:55

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		351	mg/L	20	11/21/2012 2:04	R170781
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		7.92		1	11/16/2012 8:47	R170567
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		510	mg/L	1	11/16/2012 14:07	R170603
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	11/15/2012 18:11	R170561
STANDARD METHODS 2540 F								
Solids, Settleable	NELAP	0.1		< 0.1	ml/L	1	11/15/2012 17:00	R170564
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		2.6	mg/L	1	11/16/2012 15:39	R170625
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 12:33	83483
Zinc	NELAP	10.0		2430	µg/L	1	11/20/2012 12:33	83483
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 1:15	83461
Zinc	NELAP	10.0		2460	µg/L	1	11/20/2012 1:15	83461
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00	X	16.0	µg/L	1	11/16/2012 11:55	83432
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00	X	8.19	µg/L	1	11/16/2012 10:51	83435

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Lab ID: 12110727-003

Client Sample ID: LW-Dup

Matrix: AQUEOUS

Collection Date: 11/14/2012 8:40

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	200		306	mg/L	20	11/21/2012 2:07	R170781
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		8.03		1	11/16/2012 8:49	R170567
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		460	mg/L	1	11/16/2012 14:07	R170603
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	11/15/2012 18:25	R170561
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		5.2	mg/L	1	11/20/2012 15:26	R170768
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 12:37	83483
Zinc	NELAP	10.0		480	µg/L	1	11/20/2012 12:37	83483
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 1:45	83461
Zinc	NELAP	10.0		474	µg/L	1	11/20/2012 1:45	83461
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00	X	10.5	µg/L	1	11/16/2012 11:59	83432
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00	X	7.35	µg/L	1	11/16/2012 11:01	83435

Laboratory Results

<http://www.teklabinc.com/>
Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Lab ID: 12110727-004

Client Sample ID: LW-US

Matrix: AQUEOUS

Collection Date: 11/14/2012 8:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	10		14	mg/L	1	11/21/2012 2:22	R170781
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		7.89		1	11/16/2012 8:50	R170567
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		160	mg/L	1	11/16/2012 14:07	R170603
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	11/15/2012 18:25	R170561
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		3.8	mg/L	1	11/20/2012 15:32	R170768
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 12:48	83483
Zinc	NELAP	10.0		< 10.0	µg/L	1	11/20/2012 12:48	83483
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 1:51	83461
Zinc	NELAP	10.0		< 10.0	µg/L	1	11/20/2012 1:51	83461
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00		< 2.00	µg/L	1	11/16/2012 12:02	83432
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00		< 2.00	µg/L	1	11/16/2012 11:04	83435

Laboratory Results

<http://www.teklabinc.com/>
Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Lab ID: 12110727-005

Client Sample ID: LW-DS

Matrix: AQUEOUS

Collection Date: 11/14/2012 6:35

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 375.2 REV 2.0 1993 (TOTAL)								
Sulfate	NELAP	10		20	mg/L	1	11/21/2012 2:28	R170781
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		7.86		1	11/16/2012 8:52	R170567
STANDARD METHODS 2340 C								
Hardness, as (CaCO ₃)	NELAP	5		180	mg/L	1	11/16/2012 14:07	R170603
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		< 6	mg/L	1	11/15/2012 18:25	R170561
STANDARD METHODS 5310 C, ORGANIC CARBON								
Total Organic Carbon (TOC)	NELAP	1.0		4.0	mg/L	1	11/20/2012 15:38	R170768
EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 12:51	83483
Zinc	NELAP	10.0		12.5	µg/L	1	11/20/2012 12:51	83483
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	11/20/2012 1:57	83461
Zinc	NELAP	10.0		13.3	µg/L	1	11/20/2012 1:57	83461
STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA								
Lead	NELAP	2.00		2.06	µg/L	1	11/16/2012 12:06	83432
STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)								
Lead	NELAP	2.00		< 2.00	µg/L	1	11/16/2012 11:08	83435

Sample Summary

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
12110727-001	LW-001	Aqueous	5	11/14/2012 8:30
12110727-002	LW-002	Aqueous	5	11/14/2012 6:55
12110727-003	LW-Dup	Aqueous	5	11/14/2012 8:40
12110727-004	LW-US	Aqueous	5	11/14/2012 8:00
12110727-005	LW-DS	Aqueous	5	11/14/2012 6:35

Dates Report

<http://www.teklabinc.com/>
Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
12110727-001A	LW-001	11/14/2012 8:30	11/15/2012 14:25		
	Standard Methods 2540 F				11/15/2012 17:00
12110727-001B	LW-001	11/14/2012 8:30	11/15/2012 14:25		
	EPA 600 375.2 Rev 2.0 1993 (Total)				11/21/2012 2:01
	Standard Method 4500-H B, Laboratory Analyzed				11/16/2012 8:46
	Standard Methods 2340 C				11/16/2012 14:07
12110727-001C	LW-001	11/14/2012 8:30	11/15/2012 14:25		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			11/16/2012 14:26	11/20/2012 1:09
	Standard Methods 3030 E, 3113 B, Metals by GFAA			11/15/2012 16:53	11/16/2012 11:45
12110727-001D	LW-001	11/14/2012 8:30	11/15/2012 14:25		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			11/19/2012 8:36	11/20/2012 12:22
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			11/15/2012 20:25	11/16/2012 15:08
12110727-001E	LW-001	11/14/2012 8:30	11/15/2012 14:25		
	Standard Methods 5310 C, Organic Carbon				11/16/2012 15:32
12110727-002A	LW-002	11/14/2012 6:55	11/15/2012 14:25		
	Standard Methods 2540 F				11/15/2012 17:00
12110727-002B	LW-002	11/14/2012 6:55	11/15/2012 14:25		
	EPA 600 375.2 Rev 2.0 1993 (Total)				11/21/2012 2:04
	Standard Method 4500-H B, Laboratory Analyzed				11/16/2012 8:47
	Standard Methods 2340 C				11/16/2012 14:07
12110727-002C	LW-002	11/14/2012 6:55	11/15/2012 14:25		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			11/16/2012 14:26	11/20/2012 1:15
	Standard Methods 3030 E, 3113 B, Metals by GFAA			11/15/2012 16:53	11/16/2012 11:55
12110727-002D	LW-002	11/14/2012 6:55	11/15/2012 14:25		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			11/19/2012 8:36	11/20/2012 12:33
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			11/15/2012 20:25	11/16/2012 10:51
12110727-002E	LW-002	11/14/2012 6:55	11/15/2012 14:25		
	Standard Methods 5310 C, Organic Carbon				11/16/2012 15:39
12110727-003A	LW-Dup	11/14/2012 8:40	11/15/2012 14:25		
	Standard Method 4500-H B, Laboratory Analyzed				11/16/2012 8:49
	Standard Methods 2340 C				11/16/2012 14:07
	Standard Methods 2540 D				11/15/2012 18:25
12110727-003B	LW-Dup	11/14/2012 8:40	11/15/2012 14:25		
	EPA 600 375.2 Rev 2.0 1993 (Total)				11/21/2012 2:07

Dates Report

<http://www.teklabinc.com/>
Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Sample ID	Client Sample ID	Collection Date	Received Date	Prep Date/Time	Analysis Date/Time
	Test Name				
12110727-003C	LW-Dup	11/14/2012 8:40	11/15/2012 14:25		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			11/16/2012 14:26	11/20/2012 1:45
	Standard Methods 3030 E, 3113 B, Metals by GFAA			11/15/2012 16:53	11/16/2012 11:59
12110727-003D	LW-Dup	11/14/2012 8:40	11/15/2012 14:25		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			11/19/2012 8:36	11/20/2012 12:37
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			11/15/2012 20:25	11/16/2012 11:01
12110727-003E	LW-Dup	11/14/2012 8:40	11/15/2012 14:25		
	Standard Methods 5310 C, Organic Carbon				11/20/2012 15:26
12110727-004A	LW-US	11/14/2012 8:00	11/15/2012 14:25		
	Standard Method 4500-H B, Laboratory Analyzed				11/16/2012 8:50
	Standard Methods 2340 C				11/16/2012 14:07
	Standard Methods 2540 D				11/15/2012 18:25
12110727-004B	LW-US	11/14/2012 8:00	11/15/2012 14:25		
	EPA 600 375.2 Rev 2.0 1993 (Total)				11/21/2012 2:22
12110727-004C	LW-US	11/14/2012 8:00	11/15/2012 14:25		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			11/16/2012 14:26	11/20/2012 1:51
	Standard Methods 3030 E, 3113 B, Metals by GFAA			11/15/2012 16:53	11/16/2012 12:02
12110727-004D	LW-US	11/14/2012 8:00	11/15/2012 14:25		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			11/19/2012 8:36	11/20/2012 12:48
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			11/15/2012 20:25	11/16/2012 11:04
12110727-004E	LW-US	11/14/2012 8:00	11/15/2012 14:25		
	Standard Methods 5310 C, Organic Carbon				11/20/2012 15:32
12110727-005A	LW-DS	11/14/2012 6:35	11/15/2012 14:25		
	Standard Method 4500-H B, Laboratory Analyzed				11/16/2012 8:52
	Standard Methods 2340 C				11/16/2012 14:07
	Standard Methods 2540 D				11/15/2012 18:25
12110727-005B	LW-DS	11/14/2012 6:35	11/15/2012 14:25		
	EPA 600 375.2 Rev 2.0 1993 (Total)				11/21/2012 2:28
12110727-005C	LW-DS	11/14/2012 6:35	11/15/2012 14:25		
	EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total)			11/16/2012 14:26	11/20/2012 1:57
	Standard Methods 3030 E, 3113 B, Metals by GFAA			11/15/2012 16:53	11/16/2012 12:06
12110727-005D	LW-DS	11/14/2012 6:35	11/15/2012 14:25		
	EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved)			11/19/2012 8:36	11/20/2012 12:51
	Standard Methods 3030 B, 3113 B, Metals by GFAA (Dissolved)			11/15/2012 20:25	11/16/2012 11:08
12110727-005E	LW-DS	11/14/2012 6:35	11/15/2012 14:25		
	Standard Methods 5310 C, Organic Carbon				11/20/2012 15:38

Quality Control Results

<http://www.teklabinc.com/>
Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

EPA 600 375.2 REV 2.0 1993 (TOTAL)

Batch R170781	SampType: MBLK	Units mg/L								Date Analyzed
SampID: MBLK										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Sulfate	10		< 10						11/20/2012	

Batch R170781	SampType: LCS	Units mg/L								Date Analyzed
SampID: LCS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Sulfate	10		21	20	0	106.1	90	110	11/20/2012	

Batch R170781	SampType: MS	Units mg/L								Date Analyzed
SampID: 12110727-005BMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Sulfate	10		31	10	20.37	105.7	90	110	11/21/2012	

Batch R170781	SampType: MSD	Units mg/L								Date Analyzed
SampID: 12110727-005BMSD										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Sulfate	10		31	10	20.37	109.5	30.94	1.22	11/21/2012	

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R170567	SampType: LCS	Units								Date Analyzed
SampID: LCS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Lab pH	1.00		6.98	7.00	0	99.7	99.1	100.8	11/16/2012	

Batch R170567	SampType: DUP	Units								Date Analyzed
SampID: 12110727-001BDUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Lab pH	1.00		8.02				7.990	0.37	11/16/2012	

Batch R170567	SampType: DUP	Units								Date Analyzed
SampID: 12110727-002BDUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Lab pH	1.00		7.93				7.920	0.13	11/16/2012	

Batch R170567	SampType: DUP	Units								Date Analyzed
SampID: 12110727-003ADUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Lab pH	1.00		8.03				8.030	0.00	11/16/2012	

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

STANDARD METHOD 4500-H B, LABORATORY ANALYZED

Batch R170567		SampType: DUP		Units		RPD Limit 10				
SampID: 12110727-004ADUP										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH		1.00		7.88				7.890	0.13	11/16/2012

Batch R170567		SampType: DUP		Units					RPD Limit 10		
SampID: 12110727-005ADUP										Date Analyzed	
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Lab pH		1.00		7.85				7.860	0.13	11/16/2012	

STANDARD METHODS 2340 C

Batch R170603		SampType: MBLK		Units mg/L						
SampID: MB-R170603										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)		5		< 5						11/16/2012

Batch R170603		SampType: LCS		Units mg/L						
SampID: LCS-R170603										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)		5		1000	1000	0	100.0	90	110	11/16/2012

Batch R170603		SampType: MS		Units mg/L						
SampID: 12110727-005AMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as (CaCO3)		5		380	200	180.0	100.0	85	115	11/16/2012

Batch R170603		SampType: MSD		Units mg/L				RPD Limit 10			
SampID: 12110727-005AMSD											Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Hardness, as (CaCO3)		5		370	200	180.0	95.0	380.0	2.67	11/16/2012	

STANDARD METHODS 2540 D

Batch R170561		SampType: MBLK		Units mg/L						
SampID: MBLK										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Suspended Solids		6		< 6						11/15/2012

Batch R170561		SampType: LCS		Units mg/L						
SampID: LCS										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Total Suspended Solids	6		92	100	0	92.0	85	115	11/15/2012	
Total Suspended Solids	6		90	100	0	90.0	85	115	11/15/2012	
Total Suspended Solids	6		98	100	0	98.0	85	115	11/15/2012	
Total Suspended Solids	6		94	100	0	94.0	85	115	11/15/2012	
Total Suspended Solids	6		94	100	0	94.0	85	115	11/15/2012	

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

STANDARD METHODS 2540 D

Batch R170561 SampType: DUP		Units mg/L		RPD Limit 15						Date Analyzed
SampID: 12110727-005A DUP										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Total Suspended Solids	6		< 6				0	0.00		11/15/2012

STANDARD METHODS 5310 C, ORGANIC CARBON

Batch R170625 SampType: MBLK		Units mg/L								Date Analyzed
SampID: CCB										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Organic Carbon (TOC)	1.0		< 1.0							11/16/2012

Batch R170625 SampType: LCS		Units mg/L								Date Analyzed
SampID: CCV										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Organic Carbon (TOC)	10.0		54.4	59.7	0	91.2	90	110		11/16/2012

Batch R170768 SampType: MBLK		Units mg/L								Date Analyzed
SampID: ICB/MBLK										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Organic Carbon (TOC)	1.0		< 1.0							11/20/2012

Batch R170768 SampType: LCS		Units mg/L								Date Analyzed
SampID: ICV/LCS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Organic Carbon (TOC)	10.0		59.4	59.7	0	99.4	90	110		11/20/2012

Batch R170768 SampType: MS		Units mg/L								Date Analyzed
SampID: 12110727-005EMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Organic Carbon (TOC)	1.0		8.7	5.0	4.030	93.2	85	115		11/20/2012

Batch R170768 SampType: MSD		Units mg/L				RPD Limit 10				Date Analyzed
SampID: 12110727-005EMSD										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Total Organic Carbon (TOC)	1.0		8.7	5.0	4.030	92.6	8.690	0.35		11/20/2012

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 83483 SampType: MBLK		Units µg/L								Date Analyzed
SampID: MB-83483										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Cadmium	2.00		< 2.00	2.00	0	0	-100	100		11/20/2012
Zinc	10.0		< 10.0	10.0	0	0	-100	100		11/20/2012

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

Batch 83483		SampType: LCS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		44.8	50.0	0	89.6	85	115	11/20/2012
Zinc		10.0		477	500	0	95.5	85	115	11/20/2012

Batch 83483		SampType: MS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		44.8	50.0	1.1	87.4	75	125	11/20/2012
Zinc		10.0		984	500	532.4	90.4	75	125	11/20/2012

Batch 83483		SampType: MSD		Units µg/L						RPD Limit 20	Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Cadmium		2.00		44.5	50.0	1.1	86.8	44.8	0.67		11/20/2012
Zinc		10.0		984	500	532.4	90.2	984.3	0.08		11/20/2012

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

Batch 83461		SampType: MBLK		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		< 2.00	2.00	0	0	-100	100	11/19/2012
Zinc		10.0		< 10.0	10.0	0	0	-100	100	11/19/2012

Batch 83461		SampType: LCS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		47.7	50.0	0	95.4	85	115	11/19/2012
Zinc		10.0		496	500	0	99.3	85	115	11/19/2012

Batch 83461		SampType: MS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Cadmium		2.00		48.1	50.0	1.8	92.6	75	125	11/20/2012
Zinc		10.0		3000	500	2455	108.0	75	125	11/20/2012

Batch 83461		SampType: MSD		Units µg/L						RPD Limit 20	Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Cadmium		2.00		47.7	50.0	1.8	91.8	48.1	0.84		11/20/2012
Zinc		10.0		2980	500	2455	105.4	2995	0.44		11/20/2012

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

STANDARD METHODS 3030 E, 3113 B, METALS BY GFAA

Batch 83432		SampType: MBLK		Units µg/L						
SampID: MB-83432										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Lead	2.00		< 2.00	2.00	0	32.0	-100	100	11/16/2012	

Batch 83432		SampType: LCS		Units µg/L						
SampID: LCS-83432										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Lead	2.00		15.0	15.0	0	99.9	85	115	11/16/2012	

Batch 83432		SampType: MS		Units µg/L						
SampID: 12110727-001CMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		4.00		23.9	15.0	11.4172	83.5	70	130	11/16/2012

Batch 83432		SampType: MSD		Units µg/L				RPD Limit 20		
SampID: 12110727-001CMSD										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead		4.00		24.4	15.0	11.4172	86.6	23.9494	1.90	11/16/2012

STANDARD METHODS 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)

Batch 83435		SampType: MBLK		Units µg/L						
SampID: MB-83435										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Lead	2.00		< 2.00	2.00	0	0	-100	100	11/16/2012	

Batch 83435		SampType: LCS		Units µg/L						
SampID: LCS-83435										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		2.00		13.1	15.0	0	87.4	85	115	11/16/2012

Batch 83435		SampType: MS		Units µg/L						
SampID: 12110727-001DMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lead		4.00		17.8	15.0	5.5764	81.5	70	130	11/16/2012

Batch 83435		SampType: MSD		Units µg/L				RPD Limit 20		
SampID: 12110727-001DMSD										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lead		4.00		18.2	15.0	5.5764	84.0	17.7942	2.10	11/16/2012

Receiving Check List

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12110727

Client Project: Leadwood MTS-25/86-0013

Report Date: 26-Nov-12

Carrier: Rick Schmidt

Received By: SRH

Completed by:

On:

15-Nov-12

Emily Pohlman

Emily E. Pohlman

Reviewed by:

On:

15-Nov-12

Michael L. Austin

Michael L. Austin

Pages to follow: Chain of custody

1

Extra pages included

0

Shipping container/cooler in good condition?

Yes ☒

No ☐

Not Present ☐

Temp °C 2.0

Type of thermal preservation?

None ☐

Ice ☒

Blue Ice ☐

Dry Ice ☐

Chain of custody present?

Yes ☒

No ☐

Chain of custody signed when relinquished and received?

Yes ☒

No ☐

Chain of custody agrees with sample labels?

Yes ☒

No ☐

Samples in proper container/bottle?

Yes ☒

No ☐

Sample containers intact?

Yes ☒

No ☐

Sufficient sample volume for indicated test?

Yes ☒

No ☐

All samples received within holding time?

Yes ☒

No ☐

Reported field parameters measured:

Field ☐

Lab ☒

NA ☐

Container/Temp Blank temperature in compliance?

Yes ☒

No ☐

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?

Yes ☐

No ☐

No VOA vials ☒

Water - TOX containers have zero headspace?

Yes ☐

No ☐

No TOX containers ☒

Water - pH acceptable upon receipt?

Yes ☒

No ☐

NPDES/CWA TCN interferences checked/treated in the field?

Yes ☐

No ☐

NA ☒

Any No responses must be detailed below or on the COC.



Teklab Chain of Custody

Pg. 1 of 1

Workorder 12110727

5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618)344-1004 ~ Fax:(618)344-1005

Barr Engineering Co.

Are the samples chilled? ☒ Yes ☐ No with: ☒ Ice ☐ Blue ice

Preserved in ☒ Lab ☒ Field

1001 Diamond Ridge, Suite 1100

Cooler Temp 20 Sampler SBM

SEP 11/5/12

Jefferson City MO 65109

Comments

Invoice to Mark Nations. Results to Allison Olds and Mark Nations, mnations@doerun.com.

Matrix is surface water.

Metals: Cd, Pb, Zn

Custody Seal intact upon pickup

Contact Allison Olds

eMail aolds@barr.com

Phone 573-638-5007

Requested Due Date Standard

Billing/PO Per contract with Doe Run

Lab Use	Sample ID	Sample Date/Time	Preservative Matrix	pH	T.S.S.	Sulfate	Settleable Solids	T.O.C.	Total Metals	Dissolved Metals	Hardness				
12110727-001	LW-001	11-14-12 08:30	Unpres Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-002	LW-002	11-14-12 06:55	Unpres Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-003	LW-Dup	11-14-12 08:40	Unpres Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-004	LW-US	11-14-12 08:00	Unpres Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-005	LW-DS	11-14-12 06:35	Unpres Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Relinquished By *	Date/Time	Received By	Date/Time
Stephen Mailanen	11-14-12 16:00	Stephane Paynes	11/15/12 12:25
	11/15/12 14:25		11/15/12 14:25

* The individual signing this agreement on behalf of client acknowledges that they have read and understand the terms of this agreement and that they have the authority to sign on behalf of client.